

SHIPWRECKED SAILING VESSELS OF WISCONSIN'S LAKE MICHIGAN

By

Chad Michael Gulseth

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Chad M. Gulseth, B.S.

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ABSTRACT

There are literally thousands of shipwrecks in the Great Lakes. Near the eastern coast of Wisconsin, hundreds of these wrecks lay on the bottom of Lake Michigan. This paper examines the shipwrecked sailing vessels of Wisconsin's Lake Michigan in order to answer three main questions. First, what were the most common causes for ships in this region to go down? Second, are any parts of the lake more dangerous than other? Finally, how do these ships appear in the archaeological record? The first question has been answered through an in-depth analysis of the Wisconsin State Historical Society's shipwreck database. The second question is addressed by looking at these wrecks spatially in comparison to ports and to one another. The last question is answered through a detailed study of three previously excavated/explored wrecks and two unexcavated shipwrecks. Predictions about the two unexcavated wrecks are then made based on their correlations and similarities with the previously excavated wrecks. One of the most important conclusions discovered in this research is how a ship's cargo can break a vessel apart as it sinks, thus causing a large debris field on the lake bottom.

ACKNOWLEDGEMENTS

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SHIPWRECKED SAILING VESSELS OF WISCONSIN'S LAKE MICHIGAN

People have been using water as a primary mode of transportation and moving goods for thousands of years. The Great Lakes of North America are no exception. Unfortunately, traveling on the open water of the Great Lakes can be a hazardous business, and often ships do not make it to their destinations. Since 1988, David Cooper and several other researchers have been compiling a database of Wisconsin's shipwrecks of Lake Michigan and Lake Superior. This database is extensive and includes some of the locations and other details about how and when these vessels were lost. There have been other researchers that have assembled similar databases and have published lists of Great Lakes shipwrecks as well. In David Swayze's book *Shipwreck!*(1992) he not only listed over 3,700 different wrecks, but he also completed a basic statistical analysis on which decades claimed most ships and how the unstable November weather on the Great Lakes contributes to the most weather related accidents. No researcher has yet conducted a more detailed statistical based analysis of these wrecks or used any modern spatial analysis to study shipwrecks of the Great Lakes. In this study I will focus on the shipwrecked sailing vessels in western Lake Michigan which sank between 1835 and 1935. I will investigate correlations between ship types and possible causes for their sinking. I will additionally analyze how these shipwrecks appear in the archaeological record. These analyses will be beneficial to our understanding of what types of data can be collected from lost or unexcavated shipwrecks because they sank under the same or similar conditions that previously excavated wrecks did.

BACKGROUND

The amount of underwater archaeological research conducted in the Great Lakes region has been quite minimal and even more so in Wisconsin's region of Lake Michigan. The first professionally staffed archaeological investigation on a shipwreck in the waters bordering Wisconsin did not take place until 1984 when the schooner *Noquebay* was surveyed by the National Park Service in Lake Superior (Cooper 1992). In January of 1988, the Wisconsin State Historical Society began the State Underwater Archaeological Program, under the Office of the State Archaeologist. This program was established in order to survey and inventory the state's underwater archaeological resources as a means of managing these sites (Cooper 1992). At this time, the database from which this study is conducted began to be formulated. With a strong reliance on historical records, and the help of recreational divers and other researchers, the database has been growing ever since. However, the amount of professional archaeological research conducted, whether it is academic or contracted, is minuscule in comparison to the number of wrecks that exist in Wisconsin waters. The State Underwater Archaeological Program has recorded over 700 historic shipwreck sites (Cooper 2002). Because of the nature of the Great Lakes' (cold, fresh water), preservation of these wrecks is among the best in the world and conservation of these sites is the number one priority of the Underwater Archaeological Program (Cooper 1992).

Shipwreck Significance

The Abandoned Shipwrecks Act of 1987 was signed into law by President George Bush on April 28, 1988 (NPS 1991). This act asserted the recreational and educational significance of shipwrecks in the United States. Shipwrecks are time capsule artifacts of one individual event

that occurred in the past, and they hold important clues about development of human culture and behavior. They can tell us about construction techniques, trade relations, and the people that traveled aboard these vessels. Shipwrecks are not like terrestrial buildings or structures; they are built to withstand the pressures of a dynamic environment and are most commonly built with the most advanced technologies available during their time of construction. Because of the obvious difficulties of shipwreck archaeology being conducted in an underwater environment, research questions often revolve around ship construction techniques. Learning of ship construction can help us to understand what people believed were the best means of seafaring transportation during that time, as well as how technology has developed over time. Furthermore, shipwrecks can also teach us about the trade relations between different populations of people. The cargo that often sinks to the depths with the rest of the ship and even the examination of ballast stones can tell us where a ship has been and where it was going, along with its nation of origin. Perhaps the most significant and most private information that we can discover from shipwrecks is learned from the recovery of personal artifacts. While traveling aboard a ship, space is limited, and therefore, people tend to bring with them only what they consider to be practical or personal items. When these types of artifacts are recovered, we can learn about who these people really were and what was most important to them. From this information we can examine how the importance of certain artifacts changes over time, allowing us to see how culture changes over time.

Past Research

Most of what we know about Lake Michigan shipwrecks comes from the historical record, recreational divers, and newer technology which has given researchers the ability to study

shipwrecks without even getting in the water. The historical accounts of Lake Michigan's wrecks are usually either well documented or non-existent. Newspaper articles are some of the best sources of shipwreck accounts. However, there are numerous amounts of literature that recount the tales of Great Lakes disasters; publications by Cris Kohl and Fredrick Stonehouse are some of the most well known (Kohl 2004; and Stonehouse 2009). Since the 1960's, with the commercial development of SCUBA equipment, recreational divers have been locating and exploring many of history's lost vessels. In the 1970's a number of recreational divers began to take a notable interest in underwater archaeology in Wisconsin. In fact, the first state archaeological permit was issued to sport divers that led the excavations on the schooner *Lucerne* site in Lake Superior at this time (Cooper 1992).

Underwater Archaeology

Underwater archaeology is done in a manner quite similar to terrestrial archaeology in that once the site is located, grid units are set up, measurements, drawings and photos are taken and artifacts recovered are provenienced, bagged and tagged, and then sent to the lab for conservation and study. However, as expected, there are a number of differences in an underwater environment. Time on the site is limited by depth; the deeper a site is underwater the less time can be spent on it due to compression rates.

There are also a few different tools that underwater archaeologists use that are not used in terrestrial archaeology. The dredge system is one of the most useful tools to shipwreck excavators. Simply put, a dredge is a gas powered water pump that is used like an underwater vacuum. Sediment is fed into the dredge head and any artifacts that go into the head are passed through an exhaust hose which has a mesh bag on the end to catch them. At the end of the dive

the dredge spoil is sorted by hand and because, just as in terrestrial archaeology, excavations are done in levels the artifacts can be provenienced accordingly. Additionally, underwater metal detectors are also incredibly handy when shipwreck remains are buried below sediments or when there is poor visibility. Another tool underwater archaeologists often use is the lift bag. Lift bags are simple sacks that are attached to larger artifacts, such as cannon, and are filled with air to assist divers in recovering heavy objects.

When a ship is too deep for divers to investigate, a number of pieces of equipment have been developed to not only locate but also explore these historic wrecks without even getting wet. Also used for sites that can be dived on, Remotely Operated Vehicles (ROV), side-scan sonar, and magnetometers have been irreplaceable pieces of technology to maritime archaeologist.

Remotely Operated Vehicles or an ROV is a free-swimming vehicle that is tethered to a command unit, usually aboard the research vessel, which delivers power and allows communication between the ROV and its human controller. ROVs can be mounted with sonar, video and still photography cameras as well as arms and baskets for collecting artifacts and specimens (Braulik 2007).

Side-scan sonar, either used as a tow fish (pulled behind a boat) or attached to an ROV, transmits sonar beams which uses acoustic pulses that bounce back to the 'fish' creating a line of data that is compressed into an image of the lake bottom (Braulik 2007). Similar to side-scan sonar, a magnetometer reflects an image of iron and other ferrous material on or in the sea bed. Wooden vessels have metal fittings, ballast stones, fasteners, and other metal objects that would be picked up by a magnetometer, and therefore, magnetometers are useful for just about any type of shipwreck (Braulik 2007). The magnetometer is incredibly useful when shipwreck remains

are buried under sediments. Side-scan sonar and a magnetometer can be used in tandem to give researchers an accurate look at a wreck before diving it. The Discovery World Museum in Milwaukee, Wisconsin uses these types of equipment aboard the *S/V Dennis Sullivan* (Figure 1) to educate students in shipwreck exploration during the summer months on Lake Michigan (Discovery World 2009).

Schooners

Schooners were the most popular type of vessel that sailed on the Great Lakes during the nineteenth and early twentieth century, special attention will be paid to this class of ship, and therefore, some background on this type of vessel is necessary. The schooner is a symbol of the Great Lakes themselves. These vessels were the work horses of modern industry and helped to create the Great Lakes region as we know it today.

A schooner is a fore and aft rigged sailing vessel with a single headsail jib and at least two masts, with the foremast that is usually smaller than the other masts. Schooners come in a wide variety of shapes and sizes, from small two masted vessels to 1200 ton five masted giants (Swayze1992). The average size of a schooner was 130 feet long with a depth (draft) of nine feet. This size vessel could carry a decent amount of cargo, navigate tight areas, and use the Welland Canal of the late1800s to get around Niagara (Swayze 1992). Most schooners were constructed from white oak, harvested from the Midwest, and had two to three masts. Some schooners had a square or triangular topsail on the fore mast, as seen in Figure 1. Their crews usually consisted of at least two officers with five to seven deckhands, though other passengers were commonly aboard as well (Swayze 1992). The average life expectancy of a Great Lakes schooner was about 15 to 20 years, though many lasted into their 30's and 40's (Swayze 1992).

Until the *S/V Dennis Sullivan* (Figure 1), schooners basically disappeared from the Great Lakes by the 1940s.



Figure 1. *S/V Dennis Sullivan*, 19th Century Replica of a Three Masted Schooner. Source: *Discovery World*.

METHODS

Sample

When approaching the shipwrecks of the Great Lakes, the task can seem a bit overwhelming with thousands of vessels lying in the darkness of the depths. Therefore, I have chosen to concentrate my study to a specific area of Lake Michigan that borders Wisconsin's east coast to roughly the center of the lake, where Wisconsin and Michigan divide the body of water and to the south of Manitowoc. There are over two hundred known wrecks in this region but there are a few selective biases that I have chosen to exercise in order to capture some meaningful data about the area. First, the compilation of the database has been an ongoing process since 1988; however, it is nearly impossible to identify accurately all the ships that have sunk in this area.

Therefore, the database that I have obtained doesn't include every wreck in the region. Secondly, I have limited my research only to wrecks that sank between 1835 and 1935. This was done to tie the research into a one hundred year block that defines this early age of sailing on the Great Lakes before steel and iron hulled vessels began to dominate the industry.

This leads to the next particularity of this study, only wooden hulled sailing vessels will be included in this research. The sailors who crewed these vessels would have faced similar harsh conditions and these wrecks will have comparable preservation. The last selective bias is to eliminate any unknown or unidentified wreckage because these sites would only skew the data with excessive unknowns. With my selective biases in place, this study will include 148 different shipwrecks.

The database itself contains numerous categories and bits of data for all these wrecks that makes research of these vessels almost limitless. For nearly all of the wrecks the information spans from the year the vessels were built and when they went down, to the cargo they were carrying and who was captaining the ships when they went down, to the actual or estimate locations of these vessels today. Many of the well known wrecks have site numbers and some are even on the National Register of Historic Places. The information that I have used from this database ultimately revolves around answering my analysis questions and the categorical information that will appear or affect the archaeology record of these ships, which will be reviewed in more detail later.

Analysis

For the statistical analysis portion of the research, Microsoft Excel and Access were used in tandem to generate queries for the following questions.

- What were the most common causes for ships sinking and what types of ships?
- What was the most dangerous time of year to be on the lake?
- During which decades did most of these vessels go down?
- How old were these ships when they sank?
- Are there any patterns or commonalities between these shipwrecks?

A chart or graph was created for each of the first four questions in order to determine the answer for the last question. Then using the most common features from each graph, they were then compared in a series of queries in order to find more commonalities. For instance, were there ships of the same type and age that went down in the same manner, or were there ships that had relatively the same gross tonnage and went down in the same month?

After acquiring these answers, the data was compared spatially with the use of Google Earth 5 (2010). Each foundered wreck was plotted by its latitude and longitude, using degrees and decimal minutes in order to answer the following questions.

- Where are the most dangerous parts of the lake?
- How do these answers compare with the patterns and commonalities of the statistical analysis?

After I completed the statistical and spatial analysis, it was found that several ships did in fact have some variables in common. These variables included ship age, construction type, length, location and type of casualty. I then investigated what these wrecks looked like in the archaeological record. To do this, ships with more than two commonalities were examined. First, three wrecks were chosen, from these categories, that had been previously excavated and were then compared with two other wrecks, from the same categories, that have not been excavated.

This was to show how predictions about unexcavated wrecks can be made prior to getting in the water.

DATA AND RESULTS

After examining the data, a few obvious correlations stood out right away. There are five main categories that I analyzed in order to answer the questions about the type of vessels and reasons that they went down and there locations. The first category examines the casualty types, including which kind of vessels went down and how they sank. Then, I look at the time of year that it was most common for wrecks to sink. Third, an examination of seasonality by decade in which these 148 wrecks went down. Next, I analyze the age of vessels when they sank and how this is significant. Finally, a spatial analysis, which uses the locations of shipwrecks to try and determine what captains were thinking when they encounter violent storms and gales.

Casualty Types

When attempting to answer the first research question; “What were the most common causes for ships sinking and what types of ships?” two approaches were taken. First, the ship types were separated, (Figure 2) and then Figure 3 shows the different ways in which these ships went down. As easily seen in Figure 1, 106 of the 148 wrecks from this study are schooners (72%). This is not because schooners were a more dangerous ship in which to sail, but because this was the most common type of vessel on the Great Lakes during the nineteenth and early twentieth centuries. Since this large number of schooners dominates the percentage of sunken sailing vessels, this is the type of ship that will be examined further when evaluating the archaeological record.

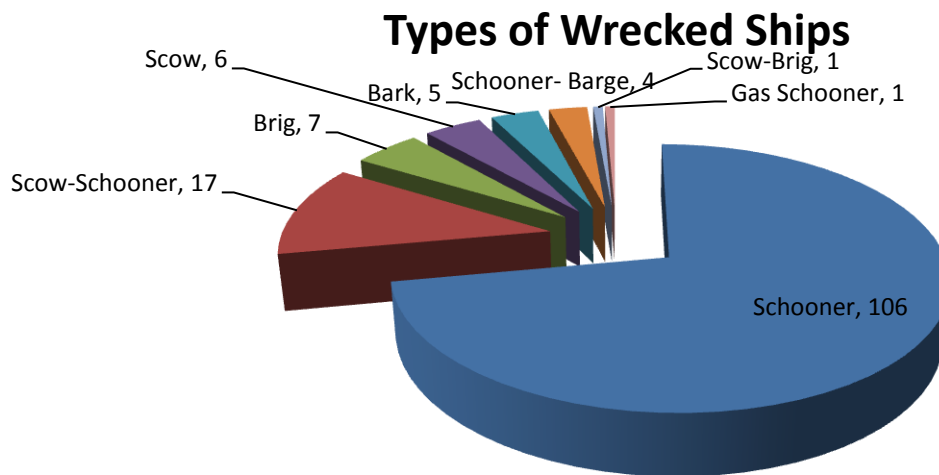


Figure 2. The number of ships that sank by type.

Figure 3 displays the different ways in which the 148 ships sank. Wrecks that are stranded get thrown up onto the shore, run aground or get smashed on rocks (Swayze 1992). Deadly reefs and shoal water can make navigating the Great Lakes quite difficult in heavy seas. Navigational errors, crew or captain complacency, and inaccurate charts can all contribute to the risk of stranding a ship. These types of wrecks are often heavily damaged while being beaten into the shore or rocks. They are also regularly salvaged due to their proximity to the shore and shallow waters. For these reasons, wrecks that were stranded have not been considered in my evaluation of shipwrecks in the archaeological record.

The second most common reason for ships of Wisconsin's Lake Michigan to go down was foundering. This is the way in which most people visualize a ship sinking. Caught in a gale or storm, ships are often blown down¹ or capsized². Water can wash over the deck, removing hatch covers and even the deckhouse, allowing other waves to enter the holds, inevitably sinking

¹ Blown down- ship is blown onto its side by fierce wind and then takes on water.

² Capsized- ship turns upside down in the water.

the ship as it takes on water. Great Lakes storms can crop up with frightening speeds and without warning. Winds can change direction before the crew has time to turn the ship to meet them. Big seas can wash over the deck removing hatch covers, allowing water to fill the holds below. A ship that loses its steering or attempts to turn around can be turned sideways, into the troughs and then tossed around before it submits to depths (Swayze 1992). All five of the wrecks that are closely examined foundered.

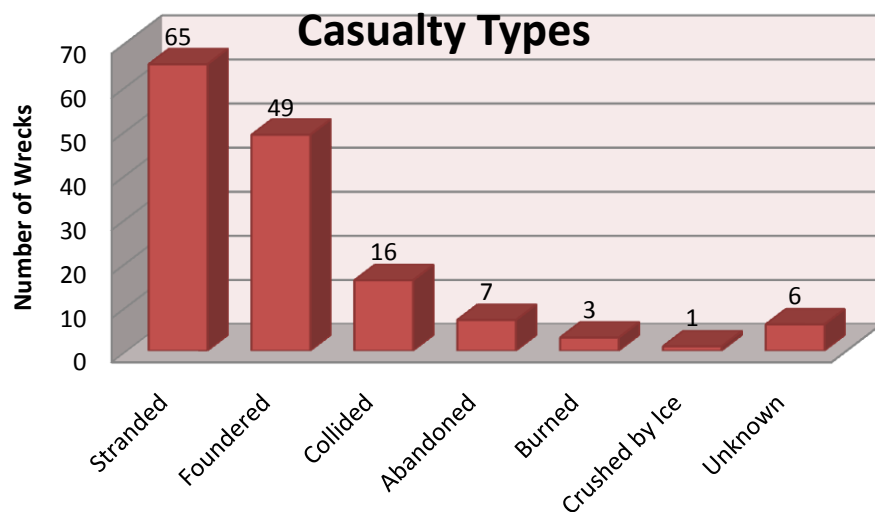


Figure 3. The ways in which the ships sank.

Though it is a rare occurrence, sometimes two ships try to occupy the same space on the lake at the same time. Collisions are still a problem today that can sometimes be unavoidable and end in a tragic loss of ships, cargo, and life. As shipping in the Great Lakes expanded and ports like Milwaukee drew numbers of vessels to the same location the likelihood of a collision became more inevitable (Swayze 1992).

The last few wrecks can be summed up with little imagination. Vessels that were abandoned were usually left to the mercy of nature, often because they were no longer “shipshape” or fit for service and just discarded. Wooden vessels were also quite susceptible to fire. Whether set on fire in order to abandoned the ship or a tragic accident, only three of the 148 wrecks went down in a blaze. The one ship that was crushed by ice could also fit the category of abandonment, in that neglecting to remove a ship before the winter ice could claim it, shows little regard for the significance of future use. Lastly, there are six wrecks that have no recorded history of how they went down.

It’s That Time of Year

When looking at the time of year that claimed the most ships, the fall season stood out above all others; specifically November. In Swayze’s study of 3,700 Great Lakes wrecks (1992) he looked at the percentages of wrecks that went down per month and concluded that 32 percent of all wrecks that went down in the Great Lakes did so in November (Table 1). He attributes this to the “legendary violence of November gales” (1992). I agree with Swayze and his conclusions. However, after analyzing my own data and looking at the sudden drop in shipwrecks during the winter months, I believe that the rush that takes place at the end of each shipping season also factored into the significant number of ships that went down during this time of the year.

Table 1. Percentages of shipwrecks by month.
Source: Swayze 1992:78

MONTH	PERCENT	MONTH	PERCENT
January	less than 1	July	3
February	less than 1	August	6
March	less than 1	September	12
April	4	October	24
May	8	November	32
June	3	December	6

Dangerous Decades

Recall that the majority of wrecks in the Great Lakes went down in the fall. This is the same for the wrecks in Wisconsin's region of Lake Michigan and can be seen in Figure 4. However, Figure 4 also shows the number of wrecks that went down by decade.

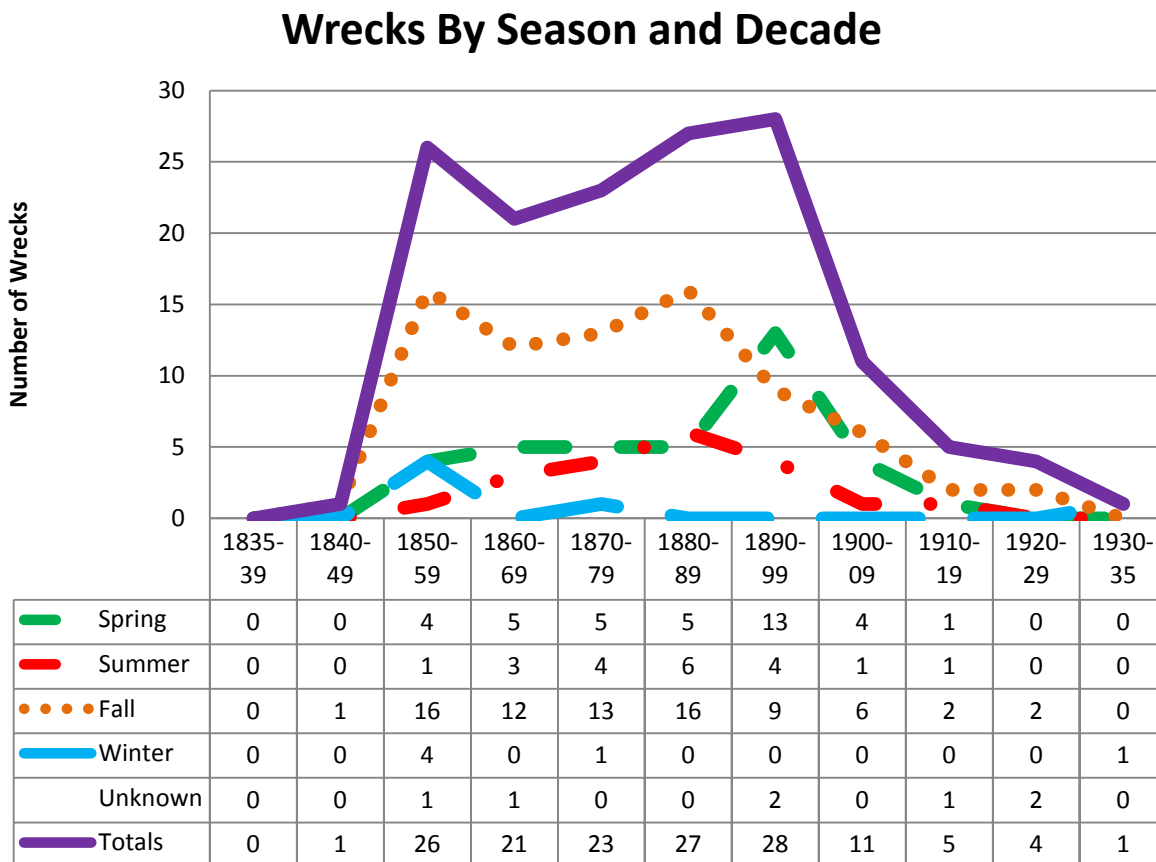


Figure 4. Shipwrecks by season and by decade.

The seasons in the graph were divided up as such: Spring being March, April, and May; summer being June, June, and August; fall being September, October, and November and the winter being December, January, and February. Then the decades are shown chronologically from left to right. The totals have also been outlined as the solid line, but the unknowns were not graphed in (to reduce clutter).

There are a few important facts that can be learned from this graph. First, the number of wrecks that occur in the fall almost mirrors the total number of wrecks. This again affirms the dangers and end of the season urgencies that sailors faced during the fall period. Second, the 1890s show a peak in spring time ship wrecks from this region that Swayze did not see in his overall numbers from all of the Great Lakes (1992). Furthermore, Swayze found that the most dangerous decade overall was the 1900s; whereas I found that the dangerous decade was ten years prior in the 1890s which is a direct reflection of these spring time disasters. Finally, this graph shows a sudden increase from one wreck in the 1840s to 26 in the 1850s. I have attributed this sharp surge of ship disasters to the construction of the canal system of the Illinois and Mississippi rivers. This system was completed in 1848 and allowed ships to move from Lake Michigan to the Mississippi river, connecting New York to New Orleans with an inland water way (Mansfield 1899:190). The five wrecks that receive a closer investigation all went down between 1880 and 1895.

Aging Ships

Determining the age of a vessel when it went down is important for several reasons. First, when you subtract the ship's age from the date that it went down, the result is the year the vessel was built. The year a ship was built can be correlated with the available technology and common ship building techniques of the time. This is key knowledge to have when trying to identify newly discovered wreckage. Next, a ship's age can tell us what the average age of vessels were when they sank. With the unknown age of six of the 148 wrecks taken out, the average age of these vessels is a little more than 20 years when they sank. Figure 5 is a breakdown of vessel ages of how old they were when they sank, in five year increments. The five wrecks that I have chosen

to more closely examine were all between 27 and 35 years old when they sank (25 of the 148 are between ages 25 and 35 years old).

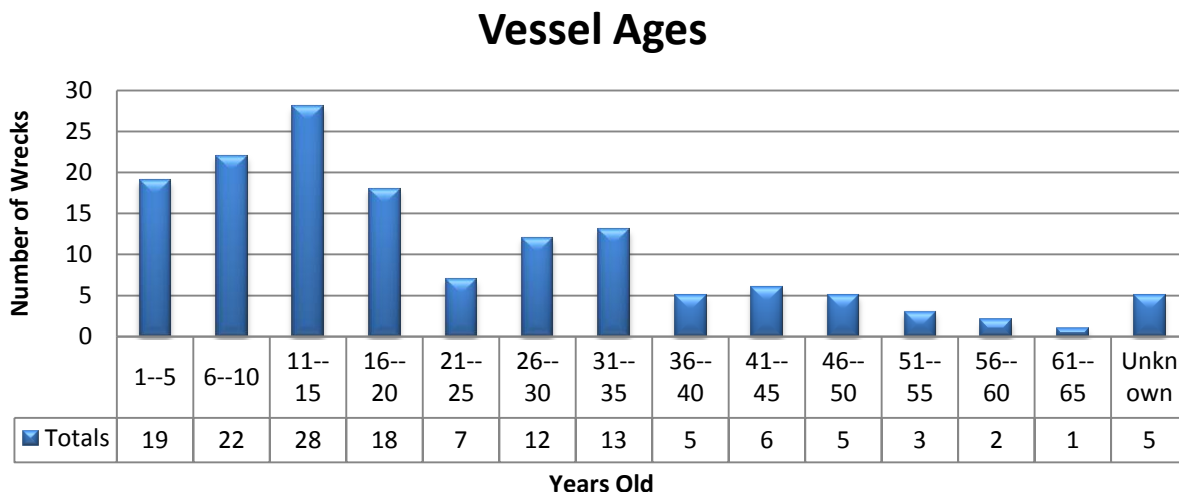


Figure 5. The age of ships when they sank.

Dangerous Regions of Lake Michigan

In order to understand which parts of Lake Michigan are more dangerous than others, the casualty type must be examined (as previously done in Figure 3) in order to rule out which ships were not affected by the lake in their sinking. Therefore, it is basically only the foundered ships that have been examined in answering this question. Of the 148 ships, 49 are known to have gone down in storms, gales or rough seas. It is also important to note these ships' sinking locations relative to the main ports of Wisconsin. As seen in Figure 6, many of the ships that foundered did so near the shore and more specifically, near ports and harbors. In fact, 75 percent of these wrecks went down within ten miles of the coast. This is most likely due to the fact that when a ship is in danger, they try to navigate towards shallower waters or a port before they get into trouble. This is evident with the sinking of the *Lumberman*. The *Lumberman* was traveling from Chicago, Illinois to Kewaunee, in northern Wisconsin (Harrington 1991), but sank only six miles off the coast, north of Racine, Wisconsin (Figure 7).

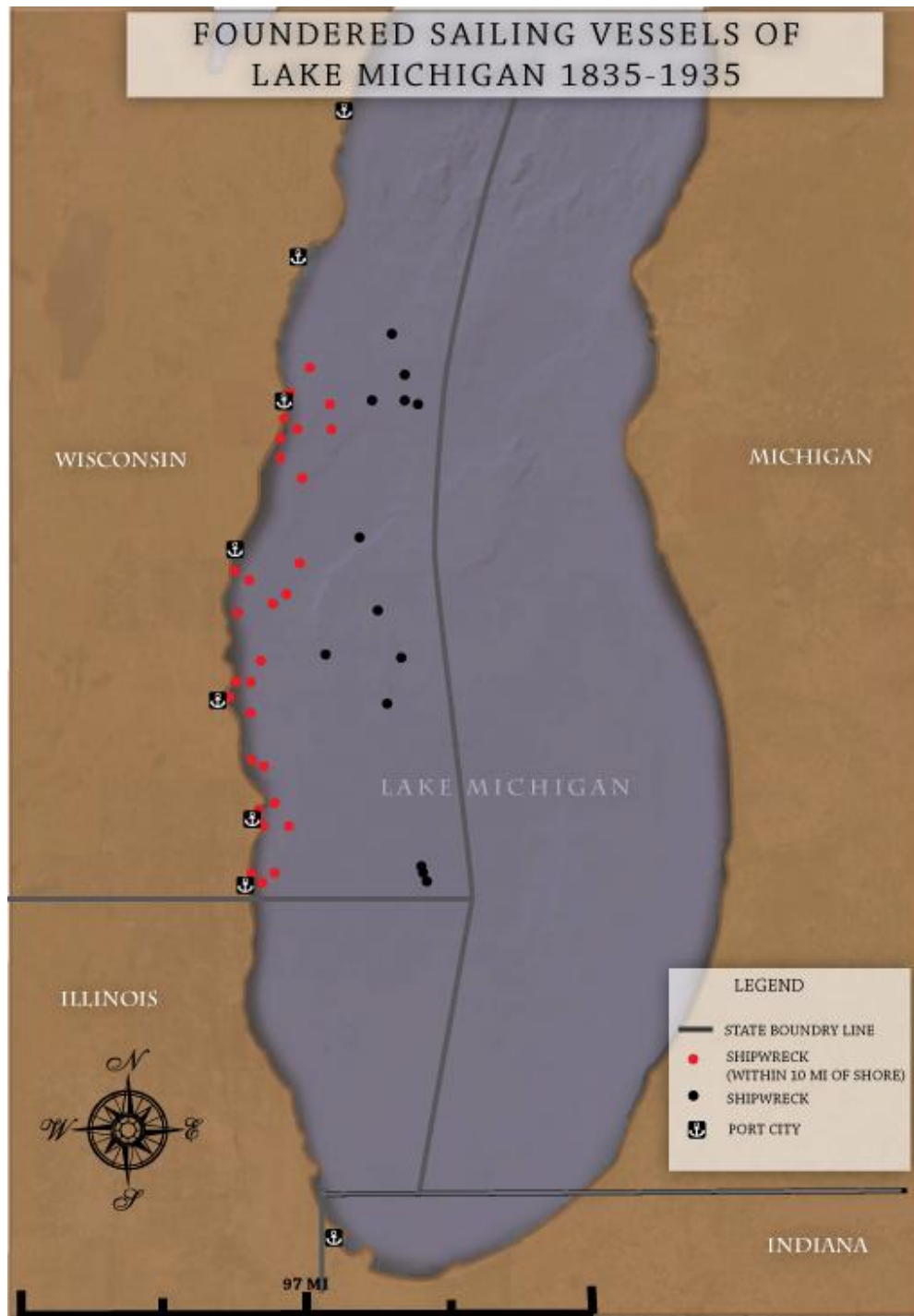


Figure 6. Ships approximately 10 miles from shore. Adapted from Google Earth (2010) by Campbell.

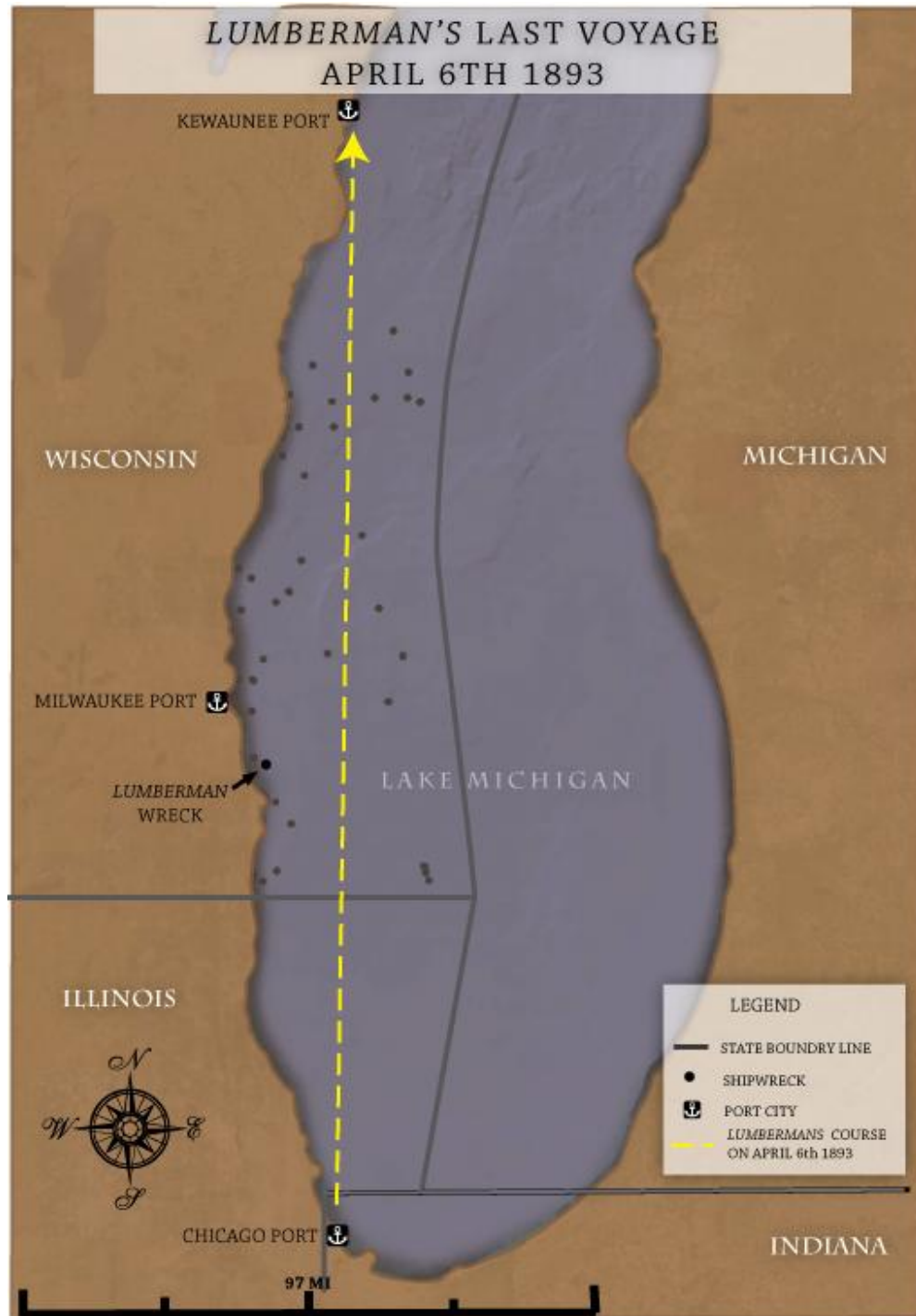


Figure 7. The *Lumberman* off course. Adapted from Google Earth (2010) by Campbell.

INTERPRETING THE ARCHAEOLOGICAL RECORD

When approaching the examination of these wrecks in the archaeological record some difficulties were encountered. In this region of study and within my sample of wrecks, there have been no formal excavations, either academic or professional, on any of these wrecks. However, the exploration of several of these ships by amateur shipwreck archaeologists has been extensive. Waterproof site maps have even been created for many of these wrecks so that shipwreck enthusiast can guide themselves around on recreational dives. Therefore, I have relied on information of this kind in order to gain a better understanding of what these wrecks look like in the archaeological record. It is important to note that due to the nature of this information that smaller artifacts have not been plotted on the site maps, in order to prevent looting.

Choosing Wrecks to Examine

As stated earlier, all five of the wrecks chosen for this investigation are schooners that foundered. There are 41 of the 148 wrecks that fit these two categories. From there I began looking at the wrecks that had received any type of underwater investigation. This limited the numbers to fewer than ten. Of those ten I chose the *Island City*, *Kate Kelly*, and the *Lumberman*. Then examining the sample in the categories that had already been constructed, I correlated these three previously excavated vessels with two unexplored shipwrecks: the *Collingwood* and the *Mediterranean* (Figure 8).

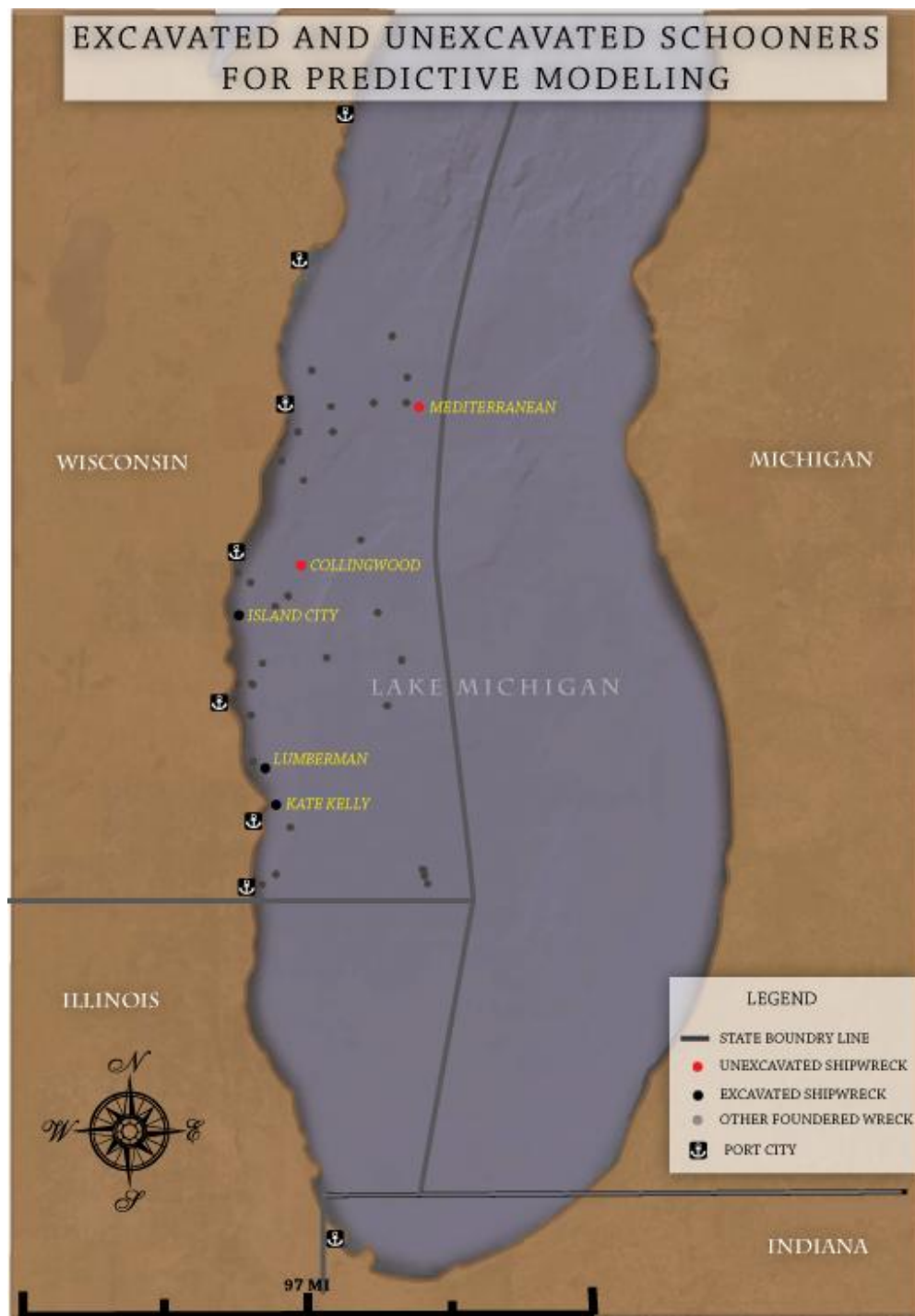


Figure 8. The 5 foundered schooners. Adapted from Google Earth (2010) by Campbell.

Correlating Foundered Ships

When attempting to predict the archaeological remains of a shipwreck by comparing it to previously explored vessels, there are only a few categories that will be visible in the archaeological record. For example, the difference between a ship foundering in the spring as opposed to the fall will not be evident in the shipwreck's remains. However, the age of a ship and the period it was built in, as well as the size of the vessel, the cargo it was holding, and its accessibility to recreational divers would have an impact on how the wreck appears in the archaeological record. Figure 9 gives idea of how these correlations are created.

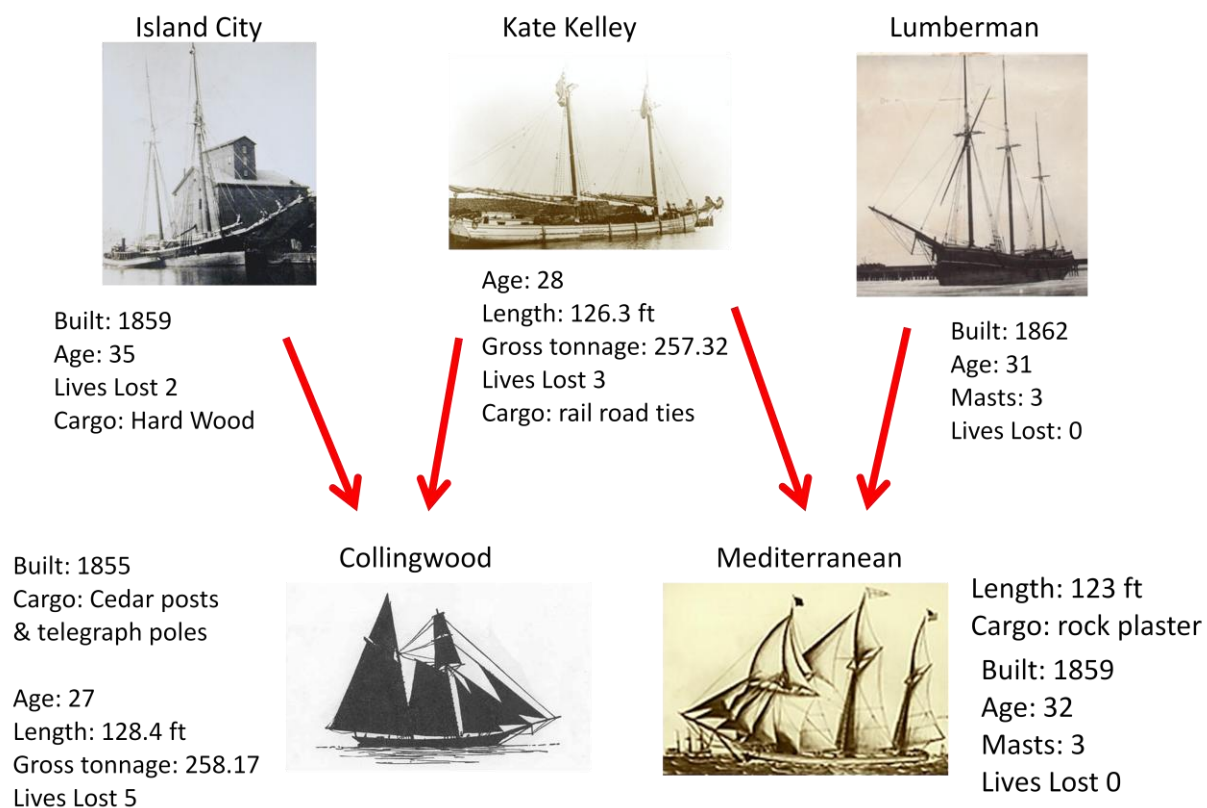


Figure 9. Vessel Correlation (not actual ships depicted).

Island City

The *Island City* was a 2 masted schooner, built in 1859 in St. Claire, Michigan. She was a small schooner that hauled cargoes of wood, lumber, and timber to and from many of the coastal communities (Harrington 1991). During a spring storm on April 8th 1894 she foundered about 16 miles northeast of Milwaukee, taking the lives of two men and her cargo of hardwood to a depth of 130 ft. She was 35 years old when she sank. Dive reports record that the remains of her 81 foot long hull is broken up on the lake bottom (Harrington 1991).

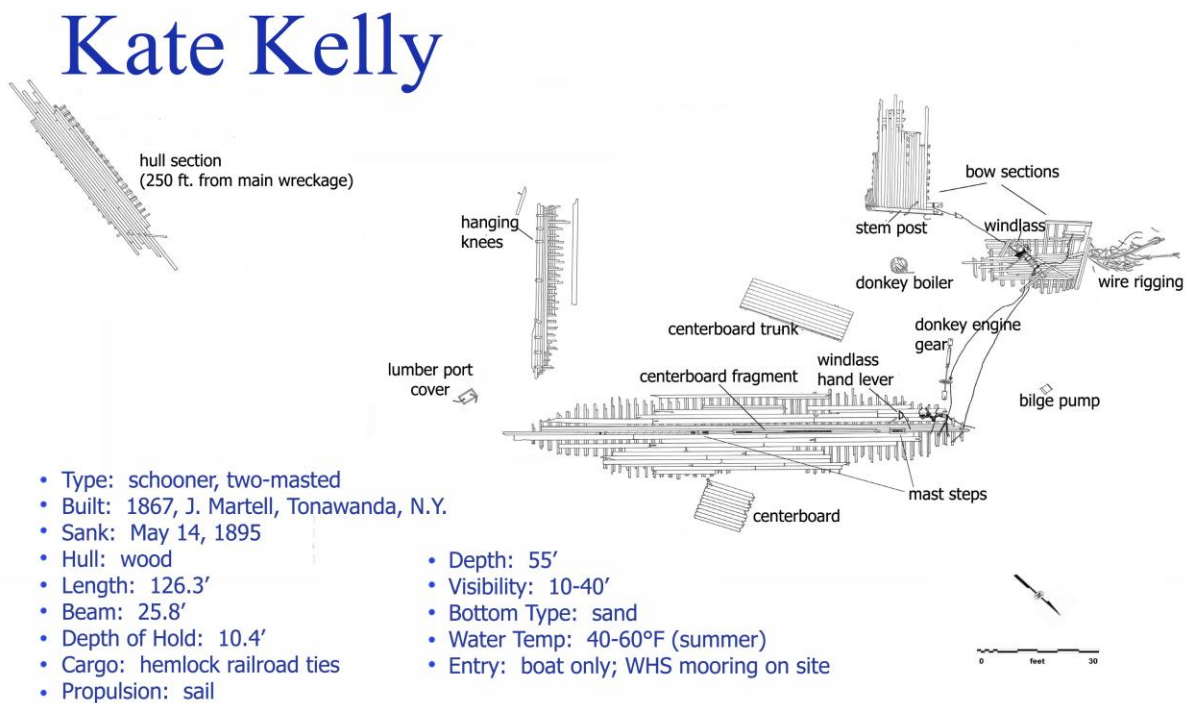
The visibility at this wreck site has been reported to be quite poor, only 5-15 feet (Harrington 1991), along with the 130 foot depth, the *Island City* does not host many guests, and therefore, a site map has not been created for this ship. However, due to the lack of visitors, we can assume that very little looting has occurred and many artifacts will still lie among the wreckage and associated debris fields. Furthermore, when a shipwreck lies deeper in the water there is reduced level of bacterial activity and organic materials are be preserved much better at these depths (Blot 1995).

Kate Kelly

The *Kate Kelly* is the pivotal ship that is correlated with both the *Collingwood* and the *Mediterranean*. The *Kate Kelly* has the best documentation and is the most well known to wreck divers of the three previously explored wrecks. The *Kate Kelly* even has a mooring buoy attached to her during the dive season, for divers to follow down and explore her wreckage (Wisconsin Shipwrecks 2003). She was built in 1867 by John Martel, in Tonawanda, New York. *Kate Kelly* was a medium size, two masted schooner that measured 126 feet long and was carrying a cargo of hemlock railroad ties and other wood products on her final voyage. The 28 year old ship met a

vicious spring storm on the morning of May 13, 1895 which took the lives of three sailors who were never found (Wisconsin Shipwrecks 2003). Local farmers had reported that a schooner had capsized near where the *Kate Kelly* was later found (Wisconsin Shipwrecks 2003). Lying in 60 feet of water, her mast was protruding out of the water and was removed by early salvors to reduce the threat to other vessels (Wisconsin Shipwrecks 2003).

What remains of the *Kate Kelly* today (Figure 10) can help us determine the events of her demise. For example, the centerboard was broken cleanly in two, with the upper half lodged in the keelson and the lower is lying on the starboard side of the hull. This suggests that Captain Hatch had the centerboard fully deployed when they went down, and it was broken when she hit the bottom. Other artifacts include the anchor chain, and several pieces of deck gear that lie in and around a debris field around the forward hull sections (Wisconsin Shipwrecks 2003).



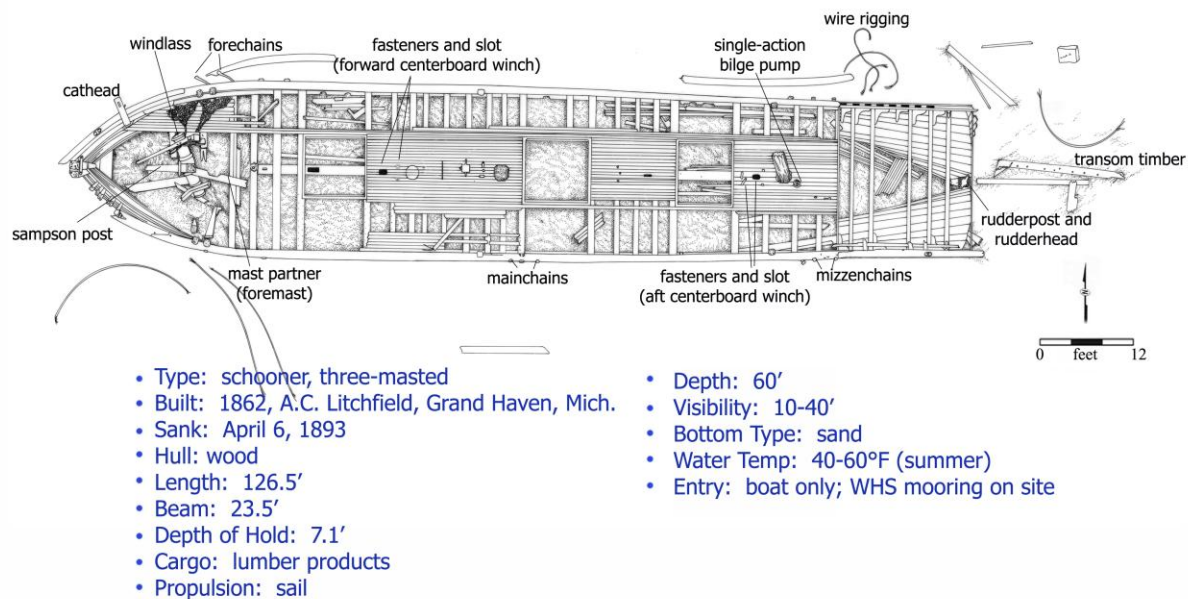
Historic Shipwrecks of Lake Michigan
 Help preserve the *Kate Kelly* – take only pictures and leave only bubbles
 Figure 10. The *Kate Kelly* Site Plan. Source: University of Wisconsin Sea Grant Institute.

Lumberman

Unlike the *Island City*, *Kate Kelley*, and the *Collingwood*, the *Lumberman* was a three masted schooner. She was constructed around a similar time in 1862, but was rebuilt in 1889. She had spent the winter of 1892 in Chicago Harbor where she left port from on April 7th to pick up a load of lumber in Kewaunee, Wisconsin. Unfortunately, she sank en route. A strong storm blew in from the west and the lack of cargo in her holds kept her floating high in the water. The crew's attempt to shorten their sails came too late and the *Lumberman* capsized (Harrington 1991). The captain had been tangled in the rigging and was pulled down with the ship, but managed to free himself, and he and the rest of the crew were rescued (Harrington 1991). When the *Lumberman* finally sank in 60 feet of water, she righted herself and her masts protruded out of the surface of the water and were removed as a navigational hazard (Harrington 1991).

The archaeological remains of the *Lumberman* (Figure 8) are in very good condition and almost all of the hull structure remains intact. This is most likely due to her lack of cargo, causing the ship to rest softly when it hit the sandy bottom of Lake Michigan. Like the *Kate Kelley*, the *Lumberman* has a buoy for recreational divers and thus has probably been somewhat looted; though the 1991 *Diver's Guide to Wisconsin* does state that many small artifacts are still remaining (Harrington). The *Lumberman* is still in such good condition that penetration of the hull is still possible for skilled wreck divers (Harrington 1991). Due to the intact nature of this vessel, the debris field is not much bigger than the size of the ship. This wreck is an outstanding example of the nineteenth century Great Lakes schooner site.

Lumberman



Historic Shipwrecks of Lake Michigan

Help preserve the *Lumberman* – take only pictures and leave only bubbles.

Figure 8. The *Lumberman* Site Plan. Source: University of Wisconsin Sea Grant Institute.

Collingwood

What we know about the *Collingwood* comes only from the historical record because no one has pinpointed its location and investigated it yet. However, there are a number of assumptions that we can make about this wreck based on the evidence from the *Island City* and the *Kate Kelly*.

The *Collingwood* resembles the *Island City* in several ways. First, they were constructed as two masted schooners and only four years apart; the *Collingwood* in 1855 and the *Island City* in 1859 (Cooper 2002). This is important because the technology available and the techniques used to build these vessels would have been quite similar. Next, they were both carrying similar cargo of wood and lumber. The *Collingwood* was carrying a load of cedar posts and telegraph poles, which, like the hardwood from the *Island City*, is likely to be scattered about the broken

wreckage of this vessel. Last, the *Collingwood*, like the *Island City*, is also likely to produce some personal artifacts because five lives were lost in this wreck and their personal gear will most likely still be down there.

The *Collingwood* also parallels closely to the *Kate Kelley* in some very important ways. First, the *Collingwood* was a 128 foot two masted schooner of 258 tons, and this closely resembles the 126 foot length and 257 tons of the *Kate Kelley* (Cooper 2002). The *Collingwood* was 27 years old when she went down and this is only one year younger than the age of the *Kate Kelly* when she sank. Based on the approximate location of the *Collingwood*, I have estimated the depth at which this wreck sits to be between 60 and 80 feet (Bathymetry of Lake Michigan 2010), and I can make two important conclusions. First, the *Collingwood* did not right herself when she reached the lake bottom. Had she righted herself, her masts would have been protruding out of the surface of the water and caused a navigational hazard. This would have also given her precise location, which there is no record of either. Next, as a ship sinks the debris will scatter in relative relation to the depth in which it has to reach the bottom. For example, the farther a ship sinks the more spread out the debris field will be. Therefore, we can assume that the debris field of this wreck will be slightly larger than that of the *Kate Kelly*.

Taking into consideration the dive reports from both the *Island City* and the *Kate Kelly*, and after examining the correlations that these two wrecks have with the *Collingwood*, I can assume that the remains of the *Collingwood* are in a broken scatter with debris extending farther than the 430 feet. This estimation is based on the over size of the *Collingwood* and the size of the *Kate Kelly*'s debris field. The heavy load of cargo that was in the hold of the *Collingwood* would have brought her to the bottom with a crushing force, breaking apart much of the vessel like the *Island City* and the *Kate Kelly*. The centerboard of this ship was most likely down, in order to

handle better in the storm that took her. As such, like the *Kate Kelly*, the centerboard of the *Collingwood* can be found broken from when she hit the bottom. As she did not right herself the *Collingwood* would have gone down violently with her cargo of telegraph poles and cedar posts shifting about and punching holes in the hull of the vessel and breaking her up as she went down.

Mediterranean

The *Mediterranean* correlates closely with the *Lumberman* in that they are both three masted schooners and only a year apart in age when they both sank. They were also built only three years apart, the *Mediterranean* in Sodus, New York and the *Lumberman* in Grand Haven, Michigan (Cooper 2002). In addition, the *Mediterranean*, like the *Lumberman*, did not have any loss of life when it sank. This means that it is likely that there will be lack of personal artifacts at both wreck sites, if the crew had a chance to grab personal effects before abandoning ship.

The *Mediterranean* also shares a few similarities with the *Kate Kelley*. First, the *Mediterranean* is a mere three feet shorter than the *Kate Kelley*, at 123 feet. This impacts the estimations for the overall size of the wreck site. Like the *Kate Kelley*, the *Mediterranean* was carrying a heavy cargo, but of rock plaster, and this would have brought the *Mediterranean* to the bottom rapidly and hard, breaking her up as she sank. In effect, this would have caused her to break up in the same manner that the *Kate Kelley* and *Island City* did on the lake floor. So it can be assumed that the *Mediterranean* is also in a broken scatter, but her cargo would be intact. The debris field can also be understood to be roughly larger than the *Island City*, in that the *Mediterranean* was a larger vessel than the *Island City*, but they sank to approximately the same depth.

CONCLUSION

In conclusion, the Wisconsin State Historical Society's Shipwreck database can be accessed freely by the public at <http://www.maritimetrails.org/research.cfm>, and the information that they provide can be used in many different ways to answer an infinite amount of questions. I have found their database extremely useful in determining the most common reasons for ships to sink, the areas of the lake that the majority of ships went down and how these ships appear in the archaeological record. Schooners were the most common types of vessels on Lake Michigan from 1835-1935 and usually foundered during the fall months. This was due to the harsh November weather and the rush that comes at the end of the shipping season. Most of these foundered wrecks went down within ten miles of shore and were probably trying to make it to land or calmer waters when they went down. The archaeological record shows how schooners will break apart if they are heavily loaded with cargo or remain relatively intact if their hulls are lightly loaded or empty when they go down. This information leads to the specific predictions of the nature of a wreck and its associated debris field. The research that was completed in this paper can be useful in the future investigation of Great Lakes shipwrecked sailing vessels. This same methodology of predictive modeling; looking at the associated debris fields, cargo distribution, and the possible range of personal artifacts, can be applied prior to diving, thus, helping to formulate better excavation plans, research questions, and project budgets.

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